

AMENDED CLAIMS

[received by the International Bureau on 29 December 2003 (29.12.03);
original claim 1 amended; duplicated claim 9 deleted;
remaining claims unchanged (2 pages)]

1. A method for an industrial or medical process which employs radiation imaging to monitor progress of the process, in which a combination of parameters derived from the image is used to calculate output signals to enhance control of the process, and in which control adjustment is delayed to allow checking to ensure that a monitored response is real.
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2. A method as claimed in claim 1, in which the parameters of the imaging system are controlled and altered dynamically based on information contained in and extracted from the images themselves.
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3. A method as claimed in claim 1 or claim 2, in which the parameters taken into account in the control calculations include high and low level parameters.
4. A method as claimed in claim 3, in which the parameters are selected from the intensity and duration of the applied radiation, movement of the target being monitored, composition and physical state of the target, the absolute position of the target and its position relative to other elements, the absolute and relative velocity of the target, the uniformity of the target, and the image texture, pixel intensity and pixel noise.
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5. A method as claimed in any preceding claim, in which parameters derived from the image are combined with other process data for the control calculations.
6. A method as claimed in any preceding claim, in which data from the image and any related parameters is converted into process control by employing algorithms to form appropriate control outputs.
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7. A method as claimed in claim 6, in which the algorithms are selected from rule based logic, fuzzy logic, neural networks and other linear or non-linear combinations.
8. A method as claimed in claim 6 or claim 7, in which data from the 5 algorithms is employed for cross-correlation of different parameters.
9. A method as claimed in any of claims 6 to 8, in which the algorithms are used to test predicted response of the system against its actual response.
10. A method as claimed in any preceding claim, in which images acquired by the system are segmented to identify specific classes of input signal.
11. A method as claimed in any preceding claim, in which all of the monitored parameters from the image and elsewhere are analysed and manipulated to study an entire process.
- 15 12. A method as claimed in any preceding claim, in which the system employs X-ray imaging.
13. A method as claimed in claim 12, in which the system is employed for a medical X-ray fluoroscopic procedure.
14. A method as claimed in claim 12 or claim 13, in which the system 20 combines a conventional X-ray imaging system with a data processing apparatus which dynamically and automatically controls the operation of the X-ray imaging system based on the image data itself.
15. A method as claimed in claim 14, in which the system comprises an imaging computer which interprets the X-ray images and uses 25 information derived therefrom to drive two or more of the process parameters.